

Solutions to homework:

- 1a)  $7n$  (7 times  $n$ , your letter could be any letter)
- b)  $n-6$  (taking away 6 from my number would give me 6 less than that number)
- c)  $3n + 5$  ( $3n$  is three times a number, 5 more than that would be  $3n + 5$ )
- d)  $5n - 3$  ( $5n$  is five times a number, three less than that would be  $5n - 3$ )

2 - the only difference is that now there is an  $=$  and numbers on both sides, because these are equations, not expressions.

- a)  $n \div 7 = 6$  or  $n/7 = 6$
- b)  $8 + n = 17$
- c)  $2n + 5 = 11$

3 a)  $3 + x$  where  $x = \frac{1}{2}$

$$3 + x = 3 + \frac{1}{2}$$
$$= 3\frac{1}{2} \text{ or } 3.5$$

b)  $3 - x$  where  $x = -2$

$$3 - x = 3 - (-2)$$
$$= 5$$

c)  $3x$  for  $x = \frac{1}{4}$

$$3x = 3\left(\frac{1}{4}\right)$$
$$= \frac{3}{4} \text{ or } 0.75$$

$$4. \quad p = \frac{2}{3} \quad q = \frac{1}{4}$$

$$a) \quad p + q = \frac{2}{3} + \frac{1}{4}$$

$$= \frac{8}{12} + \frac{3}{12}$$

$$= \frac{11}{12}$$

$$b) \quad p - q = \frac{2}{3} - \frac{1}{4}$$

Common  
denominator  
for + and -  
fractions

$$= \frac{8}{12} - \frac{3}{12}$$

$$= \frac{5}{12}$$

I have heard that from about here on, most of you struggled. That is ok, I didn't know how comfortable you are with fractions. I will review fractions later, to be honest, the MOST important part from this lesson is that you understand how to write the parts in 1 and 2, and can sub in known values for variables. So if you got this far, you are ok. We will talk about this more when I get back.

# Today - Number Properties.

Some easy one's first.

ADDING 0 - Does not change the number - ex.  $2+0=2$ . Its still two! 0 did nothing! Lousy 0!  
This also means that  $n+0$  is still  $n$ . It works for any number in place of  $n$ .

Multiplying by 1 - ALSO does not change the number.  $5 \times 1$  is still 5. SO that means  
that  $n \times 1$  is still  $n$ .

Multiplying by 0 - Answer (product) is always 0.  $5 \times 0 = 0$   
so  $n \times 0$  is 0. Simple.

NEXT some of the less simple number properties.

LIKE

Order of addition and multiplication.

IF all you have is adding, then the order doesn't matter.

ex.

$3+2+1=6$  Could be done as  $3+2$  is 5, so  $5+1=6$

OR it could be  $2+1$  is 3, so  $3+3=6$ .

Another example -  $3+1=1+3$  - as variables this would look like  $a+b=$

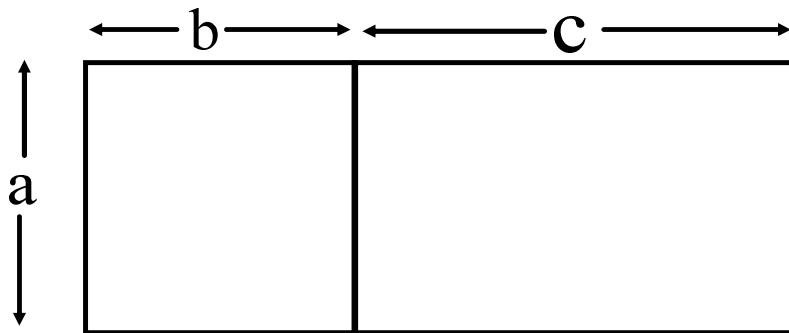


Same thing for multiplying

$6 \times 2 = 2 \times 6$  (they are both 12) When ONLY multiplying, the order won't matter.

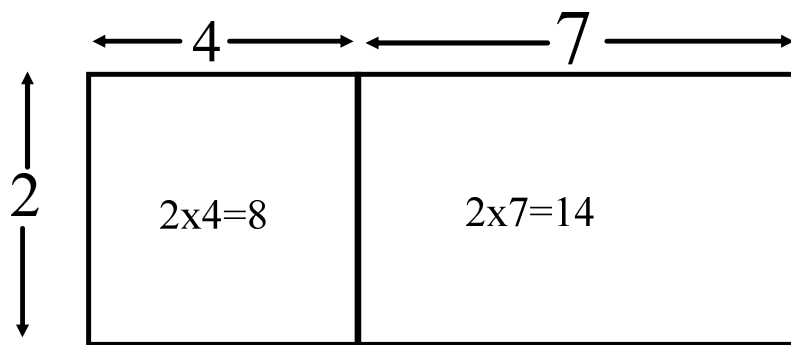
NEXT - CLASS ACTIVITY

Look at this shape



As a group, find the area of this shape if  $a=2$ ,  $b=4$ , and  $c=7$   
Explain why you did it the way you did it. If you can, try more than one way.

Some of you probably did it this way



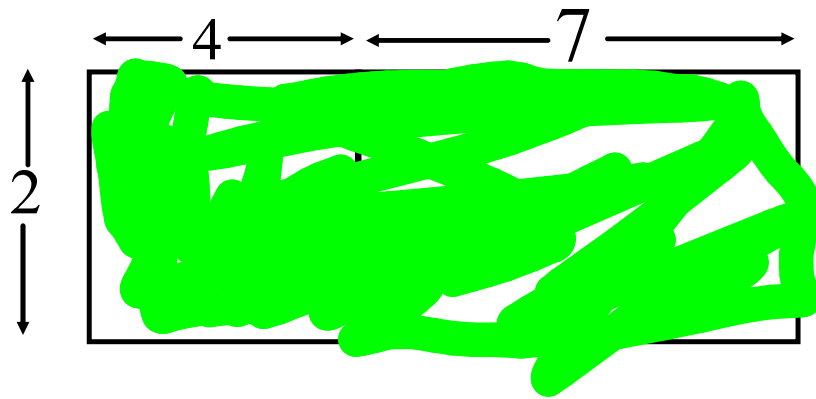
$$8 + 14 = 22$$

If you think about it, what you did was  $axb$ , then you did  $axc$ , then you added them.

or you thought that  $ab+ac$  would give you your answer of 22.

Or maybe you did this

$$4+7=11$$



You looked at it like one giant rectangle. The length is 11 ( $4+7$ ) and the height is 2. Then the area would be  $2 \times 11$ , or 22. THE SAME ANSWER!!!!

If you think about it, you did this  $a(b+c)=22$



THAT MEANS THEN, that

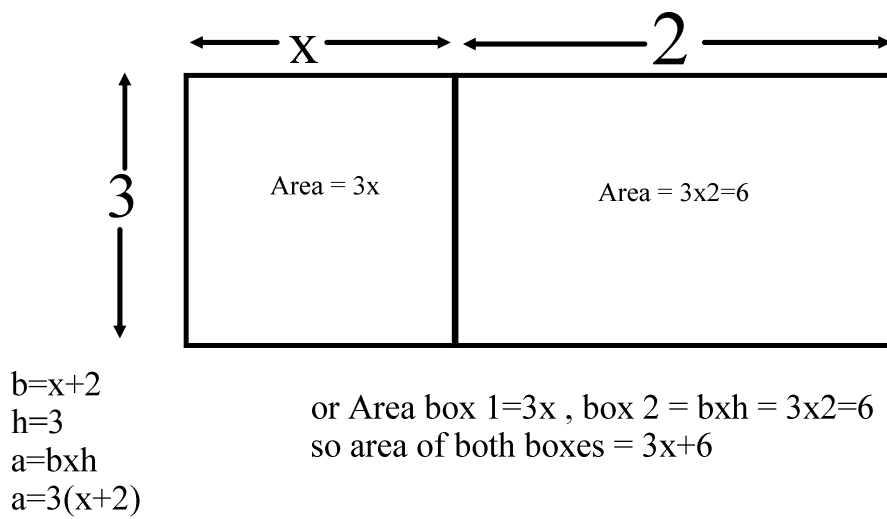
$$a(b+c) = ab + ac$$

this is called the [distributive property](#). I am sorry that I was not here to name it after one of you. It is definitely not Devin's property though (why, just because :) ). And Rachel already has two rules named after her so it probably should not be hers.

So what does this mean?

It means you can answer the following.


Draw a rectangle to show that  $3(x+2) = 3x+6$



therefore  $3(x+2)=3x+6$

Or, you know you can expand.

what is  $3(x+2)$  expanded?



The equation  $3(x+2) = 3x + 6$  is written in red and green. A blue arrow points from the 3 to the x, and a green arrow points from the 3 to the +2.

I was thinking 3 times the first term  $(x)$   
+ 3 times the second term  $(+2)$

Homework to try:  
pg 422 # 1,2,3 and 5.

I'll make sure it is on the website.

Draw a rectangle to show that  $5(x+2)$  and  $5x + 10$  are equivalent (equal)

## 2. Expand

$$2(x+10)$$

$$5(x+1)$$

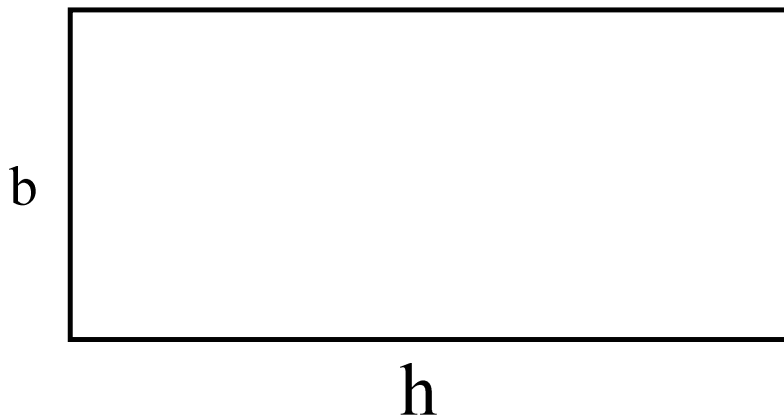
$$10(x+2)$$

$$6(12+6y)$$

$$8(8+9y)$$

$$5(7y+6)$$

3. Write two formulas for the perimeter,  $P$ , of a rectangle.  
Explain how the formulas illustrate the distributive property.



Expand.

$$5(2x+2y+2)$$

$$4(3x+5y+1)$$

$$8(7x+3y+1)$$